EP. 0028652

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 3:	A1	(11) International Publication Number: WO 80/02512
A63F 5/04		(43) International Publication Date: 27 November 1980 (27.11.80)

(21) International Application Number: PCT/US80/00404

(22) International Filing Date: 10 April 1980 (10.04.80)

(31) Priority Application Number: 038,467

(32) Priority Date: 14 May 1979 (14.05.79)

(33) Priority Country: US

(71) Applicants: TELE VEND INCORPORATED [US/US]; 3607 Anton Farms Road, Baltimore, MD 21208 (US). SYSTEM OPERATIONS, INC. [US/US]; P.O. Box 2392, Princeton, NJ 08540 (US).

(72) Inventors: KRAUSE, Stephen, R.; 3607 Anton Farms Road, Baltimore, MD 21208 (US). GOLDMAN, Max; 134 Mansfield Boulevard, South Cherry Hill, NJ 08034 (US).

(74) Agents: WEISBURD, Steven, I. et al.; 260 Madison Avenue, New York, NY 10016 (US).

(81) Designated States: BR, DE, FR (European patent), GB, JP, MC, NL.

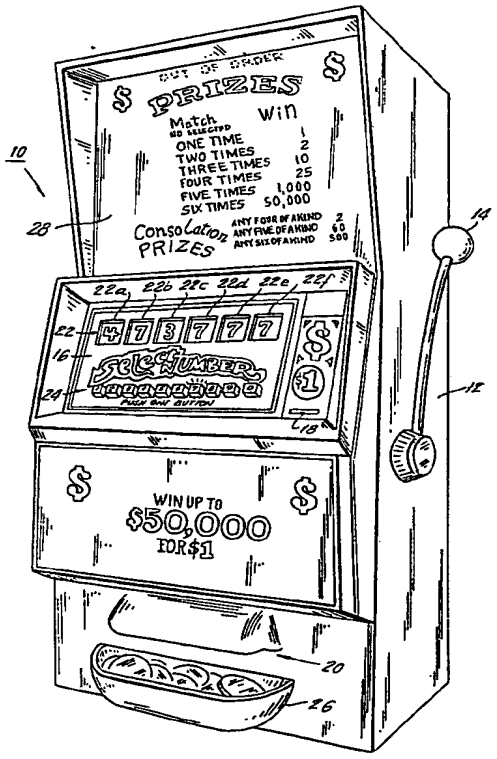
Published

With international search report
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: COMPUTERIZED GAMING SYSTEM

(57) Abstract

A computerized gaming system including a plurality of remotely located multiple or single win game machine terminals (10) and a remotely located central processing station (32). Each of the game machine terminals is computerized and enables a player to attempt to win a prize by matching player selected indicia (24) with random indicia (22) generated by the central processing station. The game machine terminal pays off prizes in accordance with a predetermined prize schedule (28) and the number of matches between the player selected indicia and the randomly generated indicia. Even if no matches are made between the player selected indicia and the randomly generated indicia, a consolation prize will be awarded if any indicia repeats in the randomly generated indicia a predetermined number of times. If the prize to be awarded is less than a predetermined value, the game machine terminal immediately pays out the prize to the player. If the prize to be awarded is greater than a predetermined value, visual and audible alarms (66) associated with the game machine terminal go off, indicating that the player has won a grand prize. In this instance, a validation ticket indicating the identification code of the game machine terminal producing the winning prize, the time and date on which the game was played, a validation code and the prize amount won is issued to a casino employee at the central processing station. The casino employee then hand carries the validation ticket to the game machine terminal and presents the ticket to the player after the employee has determined that the game machine terminal has not been tampered with. The player is then free to cash in the ticket at cashier's station in the casino.



BNSDOCID: <WO 8002512A1_I_>

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria
AU	Australia
BR	Brazil
CF	Central African Republic
CG	Congo
CH	Switzerland
CM	Cameroon
DE	Germany, Federal Republic of
DK	Denmark
FR	France
GA	Gabon
GB	United Kingdom
HU	Hungary
JP	Japan
KP	Democratic People's Republic of Korea
LI	Liechtenstein
LU	Luxembourg
MC	Monaco
MG	Madagascar
MW	Malawi
NL	Netherlands
NO	Norway
RO	Romania
SE	Sweden
SN	Senegal
SU	Soviet Union
TD	Chad
TG	Togo
US	United States of America

BNSDOCID: <WO___8002512A1_I_>

COMPUTERIZED GAMING SYSTEM

BACKGROUND OF THE INVENTION

The present invention is directed towards a novel method and apparatus for playing a game of chance, more particularly for playing a modified slot machine type game. In the past, slot machines were primarily electro-mechanical devices which operate independently of each other. While there are several variations on the standard slot machine, they generally include three symbol wheels containing a plurality of picture symbols (such as cherries and oranges) which are rotated responsive to the actuation of a switch arm coupled to the slot machine. The symbol wheels stop at "random" locations to display three picture symbols. If at least two of the symbols match, the slot machine pays out a predetermined prize which varies as a function of the amount of money wagered and the odds of matching the symbols displayed.

While the standard slot machine has proven to be very popular, it has several drawbacks. Due to its electro-mechanical nature, its frequency of repair record is relatively high. Additionally, since each machine is independent of the remaining machines, the casino does not have continuous access to information regarding the total amount wagered and total amount

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

paid out by the various machines at the casino. Finally, while the standard slot machine format has maintained the public interest for many years, casinos are continually looking for improved variations on this format to increase the interest of the casino patrons.

BRIEF DESCRIPTION OF THE INVENTION

In order to overcome the foregoing drawbacks, the present invention is directed towards a computerized gaming system including a plurality of remote game machine terminals (each in the form of a modified slot machine) and a central computer. Each of the game machine terminals is computerized and contains a minimum number of mechanical parts. Additionally, each of the remote game machine terminals continuously communicates with the central computer in a manner which enables the central computer to keep a continually updated record of the total amount of money wagered and the total amount of money paid out by each of the game machine terminals. Finally, the present invention provides an improved slot machine format by permitting the player to select random indicia to be matched, providing the player with a sense of participation.

In the preferred embodiment of the invention, each game machine terminal takes the form of a modified slot machine including six electronic numerical displays and a keyboard which enables the player to select any one of the digits 0-9. Indicia other than numbers such as card symbols, bells, fruits, etc. could also be used. The object of the game is to match the player selected number with a randomly-generated number which is displayed on the numerical displays responsive to actuation of a switch arm of the game machine terminal. The game machine terminal pays off prizes in accordance

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

with a predetermined prize schedule and the number of matches between the player selected number of indicia and the randomly-generated number of indicia. Even if no matches are made between the player selected number and the randomly-generated number, a consolation prize will be awarded if any digit (e.g., 7) repeats in the randomly-generated number a predetermined number of times (e.g., 4 times). If the prize to be awarded is less than a predetermined value, the game machine terminal immediately pays out the prize to the player. If the prize to be awarded is greater than the predetermined value, visual and audible alarms associated with the game machine terminal go off, indicating that the player has won a grand prize. In this instance, a validation ticket indicating the identification code of the game machine terminal producing the winning prize, the time and date on which the game was played, a validation code and the prize amount won is issued to a casino employee by the central computer. This will normally be done in an office area of the casino. The casino employee then hand carries the validation ticket to the game machine terminal and presents the ticket to the player after the employee has determined that the game machine terminal has not been tampered with. The player is then free to cash in the ticket at a cashier's station in the casino.

BRIEF DESCRIPTION OF THE DRAWINGS

For the purpose of illustrating the invention, there are shown in the drawings several embodiments which are presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

Figure 1 is a perspective view of the housing of a game machine terminal which forms part of the computerized gaming system of the present invention.

Figure 2 is a block diagram of the computerized gaming system of the present invention.

Figure 3 is a block diagram of the structure of the game machine terminal.

Figure 4 is a block diagram of the structure of the central computer which forms part of the computerized gaming system of the present invention.

Figures 5a and 5b are a flow diagram of a program controlling the operation of each game machine terminal of the present invention.

Figure 6 is a flow diagram of the program controlling the central computer of the present invention.

Figure 7 is a schematic diagram of a second embodiment of a game machine terminal which may be utilized in connection with the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings wherein like numerals indicate like elements, there is shown in Figure 1 a game machine terminal constructed in accordance with the principles of the present invention and designated generally as 10. Game machine terminal 10 preferably takes the form of a modified slot machine including a housing 12, a switch actuating arm 14, a display panel 16, a coin receiving slot 18 and a coin dispensing slot 20. Display panel 16 includes a digital display 22 and a keyboard 24. The object of game machine terminal 10 is to permit a player to wager a desired amount and attempt to win a prize by matching a player selected number with a psuedo-random number generated in response to the actuation of arm 14.

BNSDOCID: <WO___8002512A1_I_>

BUREAU OMPI WIPO INTERNATIONAL

A player initiates the game by depressing one of the push buttons of keyboard 24, so as to select the desired number (e.g., 7), and depositing a coin or token in coin receiving slot 18. The player then pulls switch actuating arm 14 to initiate the generation of the psuedo-random number on display 22. Upon actuation of switch arm 14, the individual digits of digital display 22 begin to incrementally advance at variable speeds and, after a predetermined time period, stop sequentially to display a psuedo-random number (473777 in the example shown). Game machine terminal 10 then determines the number of matches between the selected number (7) and the psuedo-random number (473777) and computes a prize amount determined by the number of matches and the amount wagered. If the prize amount is below a predetermined value, for example $250.00, game machine terminal 10 immediately pays out the prize by depositing coins or tokens in coin receiving tray 26. If the prize amount is greater than the predetermined value, lights behind enunciator display 28 begin flashing and an audible signal (such as a bell or a siren) is generated to indicate a grand prize winner. As will be explained in greater detail below, a validation ticket is then hand carried by an employee of the operator of gaming system 30 (normally a casino) to the winning machine and presented to the player after the employee determines that the machine had not been tampered with. The player may then cash the validation ticket in with the casino cashier.

As indicated by the prize structure set forth on enumerator display 28 of Figure 1, game machine terminal 10 is capable of playing two games. The first game compares the number selected by the player with

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

the random number displayed on digital display 22 and determines the amount won as a function of the number of matches and the amount wagered. In the example illustrated in Figure 1, game machine terminal 10 would pay out $25.00 if a $1.00 token was deposited in coin receiving slot 18. The machine terminal 10 can be set to accept coins of various denominations of, for example, 5¢, 10¢, 25¢, 50¢ or $1.00 by interchanging the coin acceptor within the machine. In a second game played by game machine terminal 10, a comparison is made between the individual digits displayed in digital display 22 and a consolation prize is awarded if any number occurs at least, for example, four times in the pseudo-random number. In the example shown, if any number other than number 7 had been selected, the player would be entitled to a payoff of $2.00 for a $1.00 wager based upon the consolation prize payoff schedule illustrated on display 28.

While Figure 1 discloses a single game machine terminal 10, the present invention contemplates a computerized gaming system 30 (see Figure 2) including a plurality of remote game machine terminals 10a, 10b, 10c, 10d ... 10n which communicate with a central computer 32 via a system bus 34 or other communication network. Central computer 32 generates the psuedo-random numbers displayed by each game machine terminal 10 and maintains a complete record of each game played including the total amount wagered, the coin denomination of each machine, and the total amount paid out by each machine terminal 10. Additionally, central computer 32 generates a validation ticket whenever a prize amount above the predetermined value is won by a player of any of the game machine terminals 10. The validation ticket is issued to an employee of the casino and

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

indicates both the terminal identification code of the winning game machine terminal 10 and the amount of the prize a validation code together with any other desired information. The validation ticket is hand carried by the casino employee to the appropriate game machine terminal and handed to the player of that machine after the casino employee determines that the machine had not been tampered with.

The manner in which computerized gaming system 30 carries out the foregoing functions will now be described with reference to Figures 3-6. Figure 3 is a block diagram of a single game machine terminal 10. Each of the game machine terminals 10a-10n are identical in structure. Accordingly, the structure and operation of only a single such terminal will be described.

The heart of game machine terminal 10 is a central processing unit (CPU) 36 which controls the operation of game machine terminal 10 in accordance with a program stored in ROM memory 38. CPU 36 may be any commercially available microprocessor, by way of example, an INTEL 8080. ROM memory 38 may be any suitable read-only memory. The program stored in memory 38 causes CPU 36 to step game machine terminal 10 through each of the steps set forth in the flow diagram of Figures 5a and 5b, and described in detail below. In addition to storing the program, memory 38 stores a multi-digit terminal identification code which is unique to and identifies both the particular game machine terminal 10 with which memory 38 is associated and the denomination of coil that coil acceptor 56 is set for. By way of example, terminal 10a, a $1.00 machine, may be identified by the terminal number 1000000 while game terminal 10b, a 5¢ machine, could be identified by the terminal number 5000001.

BUREAU OMPI WIPO INTERNATIONAL

ENSDOCID:<WO___8002512A1_I_>

In addition to ROM memory 38, each terminal 10 includes a random access memory (RAM) 40. Random access memory 40 may be any commercially available RAM and serves to temporarily store information received from central computer 32. As will be shown below, each game terminal 10 communicates with the central computer 32 by an appropriate communications link such as system bus 34. When transmitting information between the various game machine terminals 10 and central computer 32, it is preferable to encode the information transmitted on the communication system to prevent tampering with the system. To this end, game machine terminal 10 includes a data encryption unit 42 which encodes the data transmitted from the game machine terminal 10 to central computer 32 and decodes the data received by game machine terminal 10 from central computer 32. While any data encryption unit may be utilized, there are several commercially available microprocessor peripheral units (e.g. INTEL Part No. 8294) designed to encode and decode 64 bit blocks of data using the algorithm specified in the Federal Information Processing Data Encryption Standard. Such a data encryption unit operates on 64 bit text words using a 56 bit user specified key to produce 64 bit cipher words. The algorithm specified by the Federal Information Processing Data Encryption Standard is permanently contained in the data encryption unit while the user specified key is stored in memory 38. As such, the 56 bit key may be changed at any time by the operator of the computerized gaming system 30.

The operation of display panel 16 is controlled by keyboard section 44 which includes digital display 22, keyboard 24, a lever key 50 and a keyboard and display interface 52. Digital display 22 (Figure 1) includes a plurality (six in the example shown) of

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

individual displays which are preferably seven segment LED or LCD displays. As will be shown below, these displays are stepped through their various outputs (i.e., 0, 1, 2 ... 9) at a high rate of speed responsive to the actuation of switch actuating arm 14. As a result, the individual displays give the appearance that they are "rotating" in a manner similar to the pictorial display wheels of a standard slot machine. While each individual display of digital display 22 is preferably a numerical display, displays which utilize any type of indicia (e.g., alphabetical or pictorial) may also be used. Additionally, standard electro-mechanical displays may be substituted for the electronic displays illustrated.

Still referring to Figure 1, keyboard 24 includes a plurality of push button switches which are preferably back lighted interlock switches. The switch last depressed represents the number selected by the player and is back lit to the exclusion of the remaining switches. While each switch of keyboard 24 is shown as representing a different digit, they can also represent letters or pictorial displays in accordance with the type of display used in digital display 22. While push button switches are illustrated, any other appropriate selector switch may be used.

Lever key 50 is preferably a single pole, double throw snap switch which is connected to switch actuating arm 14 and closes whenever switch actuating arm 14 is pulled. When key lever 50 is actuated, it generates a game initiator signal which causes the information on keyboard 24 (i.e., the number selected) to be applied to keyboard and display interface 52 which generates a digital code representative of this information and places it on data bus 54. Interface 52 also causes the "rotation" of the individual digits of

BUREAU OMPI WIPO INTERNATIONAL

ENSDOCID:<WO 8002512A1_I_>

digital display responsive signals generated by CPU 36. See below.

The coin receiving and dispensing operations of game machine terminal 10 are controlled by coin receiving and dispensing section 46. A coin acceptor 56 is located behind coin receiving slot 18 (Figure 1) and receives a specific denomination of coins (e.g., $1.00) deposited by the player. Coin acceptor 56 verifies the receipt of a proper denomination coin or token and causes the count in coin count meter 60 to increase by one each time a non-bogus coin or token is deposited in slot 18. The count in coin count meter 60 thereby represents the amount wagered by the player. The information in coin count meter 60 is applied to data bus 54 in the form of a coded signal by peripheral interfact 64.

Coin dispenser 58 is located behind coin dispensing slot 20 and dispenses coins or tokens of the same denomination that coin acceptor 56 has been designed to accept into coin receiving tray 26 responsive to instructions received from CPU 36 via data bus 54. This information is generated in the form of digital signals on bus 54 and applied to coin dispenser 58 by peripheral interface 64. Coin count meter 62 counts the number of coins generated by coin dispenser 58 and thereby insures that the appropriate number of coins are dispensed.

Visual and audible enunciator 66 is located behind the translucent face of enunciator display 28 and includes audible and visual signal generators which provide an indication that a grand prize (i.e., one greater than the predetermined amount) has been won. Enunciator 66 is enabled by CPU 36 (via interface 64) whenever a grand prize has been won.

BNSDOCID: <WO___8002512A1_I_>

BUREAU OMPI WIPO INTERNATIONAL

Coin acceptor 56 and coin dispenser 58 are commercially available devices and may be obtained from various manufacturers of vending machines such as Rowe, Inc., Coin Acceptors, Inc., and Bally Manufacturing Company. Coin counter meters 60 and 62 are preferably electro-mechanical meters which may be obtained from Durant Company or Hecon, Inc. Peripheral interface 64 is similarly a commercially available device which may be obtained from INTEL under their designation Part No. M8255A.

As noted above, game machine terminal 10 operates in cooperation with central computer 32. Information is transmitted between game machine terminal 10 and central computer 32 via a data bus or other appropriate transmission system such as a modem. To this end, terminal 10 includes a communication interface 68 which receives the encoded data (from data encryption unit 42) which is located on data bus 54 and converts this information into a form which may be efficiently transmitted on the transmission system connecting terminal 10 with central computer 32. One suitable communication interface is available from INTEL under the designation Part No. M8251. If the information transmitted between terminal 10 and computer 32 is transmitted via a modem, the output of communication interface 68 is applied to a standard RS232C connector which applies the information to the phone line. If the information is transmitted via a standard system bus (see Figure 2), the output of interface 68 is applied directly to the data bus.

The structure of central computer 32 is illustrated in Figure 4. As shown therein, central computer 32 includes a communication interference 70 and a

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID:<WO___8002512A1_I_>

data encryption unit 74 which are identical in structure and function to interface 68 and encryption unit 42, respectively. Central computer 32 also includes a CPU 76 which is preferably more sophisticated than CPU 36 and is capable of responding to a high order language program (e.g., BASIC or FORTRAN) stored in floppy disc memory 78. As will be described in greater detail below with reference to Figure 6, CPU 76 generates a psuedo-random number responsive to receipt of the information generated by the game machine terminal 10 and compares the psuedo-random number to the number selected by the player. CPU 76 then determines the player's winnings in accordance with the prize structure illustrated on enunciator display 28 and generates a two digit win code (other win codes may be used) indicative of the prize amount. The psuedo-random number, terminal identification code, number selected and win code are stored, along with the time and date indicated by calendar clock 80, in memory 78. In this manner, floppy disc memory 78 maintains a continuous history of the operation of gaming system 30 including the total amount wagered and the amount paid out.

In addition to storing the information in memory 78, CPU 76 returns information concerning the psuedo-random number generated, the terminal identification code, the player selected number and the win code to the game machine terminal 10 after encryption by data encryption unit 74. This information is used by game machine 10 to provide a visual indication of the psuedo-random number generated and to pay the prize amount in a manner described below. In the event that the prize amount is greater than a predetemined number of coins, CPU 76 causes line printer 82 to print out a validation ticket containing information regarding the

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

identification code of the terminal 10 being played, the time and date at which the game was played, the amount wagered, a validation code and the amount won. This ticket is issued to a casino employee for verification at the terminal 10 in the manner described above. This ticket may also include a code identifying the particular gaming system 30. While central computer 32 preferably issues a validation ticket, the present invention encompasses the use of any type of information record medium which will inform the casino employee of the foregoing information.

In the preferred embodiment, central computer 32 also includes an on-line keyboard/display terminal 84 which permits the operator of gaming system 10 to withdraw any desired information from memory 78 including the total amount paid out during that time period. Each of the elements of central computer 32 are standard computer elements and may be purchased from several large computer firms.

The operation of gaming system 30 will now be described with reference to the flow diagrams of Figures 5 and 6. As noted above, the player initiates the game by depressing one of the push button switches of keyboard 24, depositing a coin or token in slot 18 (thereby incrementing the count in meter 60) and pulling switch actuating arm 14. See blocks 86 and 88 of Figure 5A. When switch actuating arm 14 is pulled, lever key 50 is closed causing a game initiation or interrupt signal to be generated and applied to data bus 54 via interface 52. CPU 36 senses this signal and, in accordance with the program stored in memory 38, requests data from keyboard 24 identifying the number selected by the player. This information is transmitted via keyboard and display interface 52 and is stored in a register of CPU 36. See block 90. Thereafter, CPU 36 applies a digital

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

signal indicating that the game has been initiated to data bus 54. This information is stored in memory 40. Immediately thereafter, CPU 36 applies information concerning the player selected number (as determined by keyboard 24), the identification code of terminal 10 (stored in memory 38) and the user selected key (also stored in memory 10) to data encryption unit 42. Data encryption unit 42 codes this information in accordance with the specified key and places the coded information on data bus 54. Thereafter, CPU 36 causes the encoded information to be transmitted to central computer 32 via communication interface 68. See block 92. The transmitted signal will be referred to herein as a request signal. The central computer accepts and acts on each request in the queing order in which the request was received.

After transmitting the encoded request signal to computer 32, CPU 36 instructs interface 52 to begin incrementing each of the individual displays of digital display 22. As indicated in blocks 94-104, a sub-routine in the program stored in memory 38 causes CPU 36 to generate signals which cause each of the individual displays of digital display 22 to increment at different speeds. By way of example, the number displayed by the first display 22a will be incremented (i.e., from 0 to 1, from 1 to 2, etc.) every 75 milliseconds while the second display 22b will be incremented once every 100 milliseconds. By varying the rate at which each of the individual displays of digital display 22 increment between 75 and 175 milliseconds, each of the displays will give the appearance of "rotating". CPU 36 continues to generate signals which cause the individual displays of digital display 22 to increment at their respective rate until the psuedo-random number is returned from central computer 32.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

After initiating the "rotation" of each of the displays of digital display 22, CPU 36 waits 100 milliseconds to determine if it has received return data from computer 32. See block 106. At the end of this time interval, CPU 36 determines whether or not data, in the form of a response signal, has been received from central computer 32. If the response signal has been received, the game is completed in the standard manner described below. If a response signal has not been received at the end of the 100 millisecond delay period, CPU 36 causes coin dispenser 58 to return the coin or token wagered, disables display 22 and posts an out-of-order light which may be located on the enunciator display 28. See blocks 110, 112, and 114. In this condition, game machine terminal 10 is out of operation and must be repaired by a casino employee before again being placed in use.

Referring now to Figures 4 and 6, the operation of central computer 32 will now be described. The request signal containing the terminal identification code and player selected number transmitted by terminal 10 are received by communication interface 70 and placed on data bus 72. The encoded information is now decoded by data encryption unit 74 and applied to CPU 76. Upon receipt of this information, CPU 76, under program control of memory 78, generates the psuedo-random number. See block 118. By way of example, the psuedo-random number may be generated utilizing an intrinsic function command (such as RND in the language BASIC) and using a random feed from a free-running incrementing storage register (RND (N)) so as to generate a multi-digit random number. This number is then rounded off to the required number of digits (6 in the embodiment illustrated in Figure 1) and is stored in one of the registers of CPU 76. CPU 76 compares the

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

pseudo-random number with the player selected number and generates a win code indicative of the prize won. See block 120. One suitable two digit win code is illustrated in the following table:

TABLE I

No match	00	No payout, end game
1 match	01	payout 1 coin
2 match	02	payout 2 coins
3 match	03	payout 10 coins
4 match	04	payout 25 coins
5 match	10	activate enunciator
6 match	20	activate enunciator
any four of a kind	05	payout 2 coins
any five of a kind	06	payout 50 coins
any six of a kind	30	activate enunciator

The win code, along with a psuedo-random number, is stored in one of the buffers of CPU 76. At this point, CPU 76 determines whether the amount won is over the predetermined value (e.g., 250 coins). See block 122. If the amount won is less than 250 coins, the psuedo-random number generated, the terminal identification code, the player selected number and the win code are encoded by data encryption unit 74 and transmitted back to terminal 10. See blocks 124, 126. If the amount won was over 250 coins, CPU 76 causes line printer 82 to print out a voucher including all of the information described above. See block 128. Thereafter, the psuedo-random number generated, the terminal identification code, the player selected number and the win code are encoded by data encryption unit 74 and retransmitted to terminal 10 in the form of an encoded response signal. See blocks 124 and 126.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

Finally, information concerning play and win data is stored in floppy disc memory 78. See block 129.

Returning now to Figures 3 and 5, the manner in which game machine terminal 10 responds to the response signal transmitted by central computer 32 will now be described. The response signal transmitted by central computer 32 is applied to data bus 54 of terminal 10 via communication interface 68. All game machine terminals (10) monitor system bus 34 for response signals during a "response signal" mode and accept only that data train that corresponds to its own address (identification number) and acknowledges acceptance to central computer 32 through a "handshake" signal. The encoded information is decoded by data encryption unit 42 and placed in RAM memory 40. CPU 36 checks the received response signal to determine if it contains the identification code of the terminal 10 with which CPU 36 is associated. If not, the response signal information is erased from memory 40 and CPU 36 awaits receipt of a new response signal. If the response signal contains the identification code associated with CPU 36, CPU 36 responds thereto as follows. Upon receipt of the proper response signal, CPU 36 dampens the rate of incrementation of each of the displays of digital display 22 to give the appearance that the displays are rotating at an exponentially decreasing speed. After approximately 300 milliseconds, CPU 36 causes the first display 22a to stop incrementing at the number corresponding to the first digit of the psuedo-random number generated in memory 40. See block 300 milliseconds later, CPU 36 causes the second display 22b to stop incrementing at the number corresponding to the second digit of the psuedo-random number (e.g., 7). See block 132. This information is repeated for the third, fourth, fifth and sixth displays (blocks 134-140) so that each of the six digits of the psuedo-random number is displayed on digital display 22.

BUREAU OMPI WIPO INTERNATION

ENSDOCID: <WO 8002512A1_I_>

CPU 36 then compares the psuedo-random number stored in memory 40 with the player selected number to determine which digit positions present a match between the preselected number and the psuedo-random number. See block 142. CPU 36 then causes those displays which match with the preselected number (e.g., displays 22b, 22d, 22e and 22f in the example shown) to indicate a match between these numbers and the preselected numbers. See block 144.

After initiating the flashing of the appropriate displays, CPU 36 withdraws the win code from memory 40 and determines whether or not the win code indicates that the player has won a prize. If the win code indicates that no prize has been won (e.g., a code of 00), the game is ended and game machine terminal 10 is ready to accept a new wager. See decision blocks 146. If the win code indicates that the player has won, CPU 36 then determines if the amount won is over the predetermined value (e.g., 250). See decision block 148. If the amount won is less than the predetermined value, CPU 36 places a digital signal on data bus 54 which causes coin dispenser 58 to dispense coins until coin count meter 62 indicates that the appropriate number of coins have been dispensed. See block 150. At this point, the game is completed and terminal 10 is again ready to accept a new wager.

If the prize amount is greater than the predetermined value, CPU 36 enables visual and audible enunciator 66 thereby indicating a grand prize. See block 152. At this point, the program in memory 38 halts and the machine is effectively disabled until it receives a clear code from computer 32. See block 154. The clear code will not be generated by the computer until the casino employee determines that the machine has not been tampered with and enters the clear code on

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

keyboard-display terminal 84 (see Figure 4). See block 156. When machine terminal 10 receives the clear code from computer 32, CPU 36 rests terminal 10 and the terminal is again ready to receive another wager. See block 158.

In the foregoing embodiment, only a single prize structure was utilized in connection with each game machine terminal 10. In accordance with the second embodiment to the present invention, the prize structure of the game may be changed randomly or according to the time of day. As shown schematically in Figure 7, enunciator display 28 may be divided into two halves 22a and 22b illustrating the respective prize structures A and B. During those portions of the day in which prize structure A is used, the portion 22a of enunciator display 22 will be back lit. Similarly, during those portions of the day in which prize structure B is used, portion 22b is back lit. The change in prize structure may be controlled by an internal clock in game machine terminal 10 or by signals received from central computer 32 which has its own timing clock 80. In either case, central computer 32 keeps track of which machines are under the control of which prize structure. The advantage of changing the prize structure in the foregoing manner is to encourage greater play during off peak hours or to add interest at random time during the day.

In another modification of applicant's invention, central computer 32 may be programmed to generate a random bonus win at machine terminal 10 irrespective of the psuedo-random number generated and the player selected number. By way of example, the bonus win may be generated randomly or the central computer 32 may be programmed to count the number of games played by gaming system 30 and generate a bonus win responsive to each thousandth game played. Such a "random" bonus adds excitement to the game played by

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

each machine terminal 10. Finally, while game machine terminal 10 has been described in connection with an embodiment that can receive only one coin or token, one skilled in the art could easily modify the program illustrated in Figures 5 and 6 to enable each machine terminal 10 to accept a variable wager determined by the number of coins deposited in slot 18 and pay out a prize in accordance with the amount wagered. The central computer would know the denomination of the coin and the number of coins inserted by a code number within the identification address of each machine terminal, for example, 1100001 would identify terminal #1 which is set for one coin operation at a denomination of $1.00. Should the customer insert $5.00 for a single play, the address would change to 1500001. A quarter machine with 3 coins inserted would change the first two numbers of the address to 5300002. The first digit of the identification number denotes the denomination of the coin while the second digit shows the amount of coins that have been inserted by the customer, for a single play.

In order to determine the down time of each remote terminal 10, central computer 32 periodically runs a monitor subroutine program during which an attempt is made to communicate with each machine terminal 10. Whenever one of the remote terminals 10 posts an out-of-order light (see block 144 of Figure 5A), it also stores an out-of-order bit in a predetermined location in RAM memory 40. If a handshake mode cannot be established or if the handshake is established but interrogation determines that an error bit is stored in RAM 40, central computer 32 causes this information to be stored in a file of disc memory 78 in order that a continuous record of the down time of each remote terminal 10 may be maintained. At the same time,

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

central computer 32 causes a print-out of the machine terminal which is down along with the time and date of the interrogation. Service personnel can then repair the out-of-order terminal.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification, as indicating the scope of the invention.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

WHAT IS CLAIMED IS:

1. A computerized gaming system, comprising:

(A) a plurality of remote game machine terminals, each of said remote game machine terminals having a unique game machine terminal identification code associated therewith;

(B) a central processing station remotely located from said game machine terminals, said central processing station communicating with said remote game machine terminals via an information transmission channel;

(C) each of said remote game machine terminals including first means for transmitting a request signal to said central processing station responsive to the generation of a player activated game initiation signal, said request signal being indicative of both a player selected indicia and the identification code unique to the remote game machine terminal transmitting said request signal;

(D) said central processing station including second means for:

(1) generating a random sequence of indicia whenever said central processing station receives a request signal generated by one of said remote game machine terminals;

(2) generating a win code indicative of a prize amount determined by the number of matches between the player selected indicia identified by said received request signal and said random sequence of indicia in accordance with a predetermined prize structure;

(3) issuing a validation ticket at said central processing station if said prize amount indicated by said win code is greater than a predetermined value, said validation ticket identifying the identification code associated with said remote game machine terminal which transmitted said received request signal; and

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

(4) transmitting a response signal to said remote game machine terminals, said response signal indicating said random sequence of indicia, said win code and the identification code associated with said remote game machine terminal which transmitted said received request signal; and

(E) said first means also determining if said transmitted response signal contains the identification code unique to the respective game machine terminal and, if said identification code is present, for:

(1) displaying said random sequence of indicia indicated by said received response signal;

(2) examining said win code indicated by said received response signal to determine if said prize amount is greater than said predetermined value; and

(3) immediately paying out said prize amount if said winnings are below said predetermined value and providing a human perceptible indication that a grand prize has been won if said prize amount is greater than said predetermined value.

2. The computerized gaming system of claim 1, wherein said first means includes means for encoding said transmitted request signal in accordance with an operator specified key and for decoding said received response signal in accordance with said operator specified key.

3. The computerized gaming system of claim 2, wherein said second means includes means for decoding said received request signals in accordance with said operator specified key and for encoding said transmitted response signals in accordance with said operator specified key.

BUREAU OMPI WIPO INTERNATIONAL

ENSDOCID:<WO___8002512A1_I_>

4. The computerized gaming system of claim 3, wherein said first and second means each include means for permitting the operator of said computerized gaming system to change said operator specified key.

5. The computerized gaming system of claim 1, wherein said first means includes:

(A) a digital display for displaying said random sequence of indicia; and

(B) a keyboard for enabling said player to select said player selected indicia.

6. The computerized gaming system of claim 5, wherein said digital display includes a plurality of electronic displays.

7. The computerized gaming system of claim 6, wherein said first means further includes means for annunciating those indicia of said random indicia which match said player selected indicia.

8. The computerized gaming system of claims 6 or 7, wherein said keyboard includes a plurality of push buttons and wherein said first means includes means for back lighting the said push buttons selected by said player.

9. The computerized gaming system of claim 1, wherein said first means further includes means for annunciating those indicia of said random sequence of indicia which match said player selected indicia.

10. The computerized gaming system of claim 1, wherein said validation ticket also includes information regarding the date and time at which said game was played.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO__8002512A1_I_>

11. The computerized gaming system of claims 1 or 10, wherein said validation ticket further includes information identifying said computerized gaming system.

12. The computerized gaming system of claim 1, wherein said prize amount is determined by the number of matches between individual elements of said random sequence of indicia as well as the number of matches between said player selected indicia and said sequence of indicia.

13. The computerized gaming system of claim 1, wherein said second means also includes means for randomly generating a win code indicative of a random prize amount irrespective of the number of matches between said player selected indicia and said random sequence of indicia.

14. The computerized gaming system of claim 1, wherein said prize amount is determined in accordance with a first predetermined prize structure during certain hours of the day and in accordance with a second predetermined prize structure during other hours of the day.

15. The computerized gaming system of claim 1, including means for enabling the operator of said computerized gaming system to change said predetermined prize structure.

16. A method for playing a game of chance utilizing a computerized gaming system comprising a plurality of remote game machine terminals, each of said remote game machine terminals having a unique game machine terminal identification code associated therewith,

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

and a central processing station remotely located from said machine terminals and communicating with said remote game machine terminals via an information transmission channel, said method comprising the steps of:

(A) transmitting a request signal from one of said remote game machine terminals to said central processing station responsive to the generation of a player activated game initiation signal, said request signal being indicative of a player selected indicia and the identification code of said one of said game machine terminals;

(B) at said central processing station;

(1) generating a random sequence of indicia responsive to receipt of said request signal;

(2) generating a win code indicative of a prize amount determined by the number of matches between said player selected indicia identified by said received request signal and said random sequence of indicia in accordance with a predetermined prize structure;

(3) issuing a validation ticket if said prize amount indicated by said win code is greater than a predetermined value, said validation ticket identifying the identification code associated with said one of said remote game machine terminals and the prize amount indicated by said win code; and

(4) transmitting a response signal to said one of said game machine terminals, said response signal indicating said random sequence of indicia, said win code and said identification code associated with said one of said remote game machine terminals; and

(C) determining, at said one of said remote game machine terminals, if said transmitted reponse signal contains said identification code associated with said one of said game machine terminals and, if said identification code is present:

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

(1) displaying, at said one of said remote game machine terminals, said random sequence of indicia indicated by said received response signal;

(2) examining, at said one of said remote game machine terminals, said win code indicated by said received response signal to determine if said prize amount is greater than said predetermined value; and

(3) immediately paying out, at said one of said remote game machine terminals, said prize amount if said prize amount is below said predetermined value and providing a human perceptible indication that a grand prize has been won if said prize amount is greater than said predetermined value.

17. The method of claim 16, further including the step of encoding said transmitted request signal in accordance with an operator specified key and decoding said received response signal in accordance with said operator specified key.

18. The method of claim 17, further including the steps of decoding said received request signals in accordance with said operator specified key and for encoding said transmitted response signals in accordance with said operator specified key.

19. The method of claim 18, further including the step of changing said operator specified key.

20. The method of claim 26, further including the step of annunciating those indicia of said random sequence of indicia which are displayed at said one of said remote game machine terminals and which match said player selected indicia.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

21. The method of claim 16, wherein said prize amount is determined by the number of matches between individual elements of said random sequence of indicia as well as the number of matches between said player selected indicia and said sequence of indicia.

22. The method of claim 16, further including the step of randomly generating, at said central processing station, a win code indicative of a random prize amount irrespective of the number of matches between said player selected indicia and said random sequence of indicia.

23. The method of claim 16, wherein said prize amount is determined in accordance with the first predetermined prize structure during certain hours of the day and in accordance with the second predetermined prize structure during other hours of the day.

24. The computerized gaming system of claim 1, wherein said first means includes:

(a) a digital display for displaying said random sequence of indicia; and

(b) a dial for enabling said player to select said player-selected indicia.

25. The computerized gaming system of claim 1, wherein said prize amount is normally determined in accordance with a first predetermined prize structure and is determined in accordance with a second predetermined prize structure during random hours of the day.

BNSDOCID: <WO___8002512A1_I_>

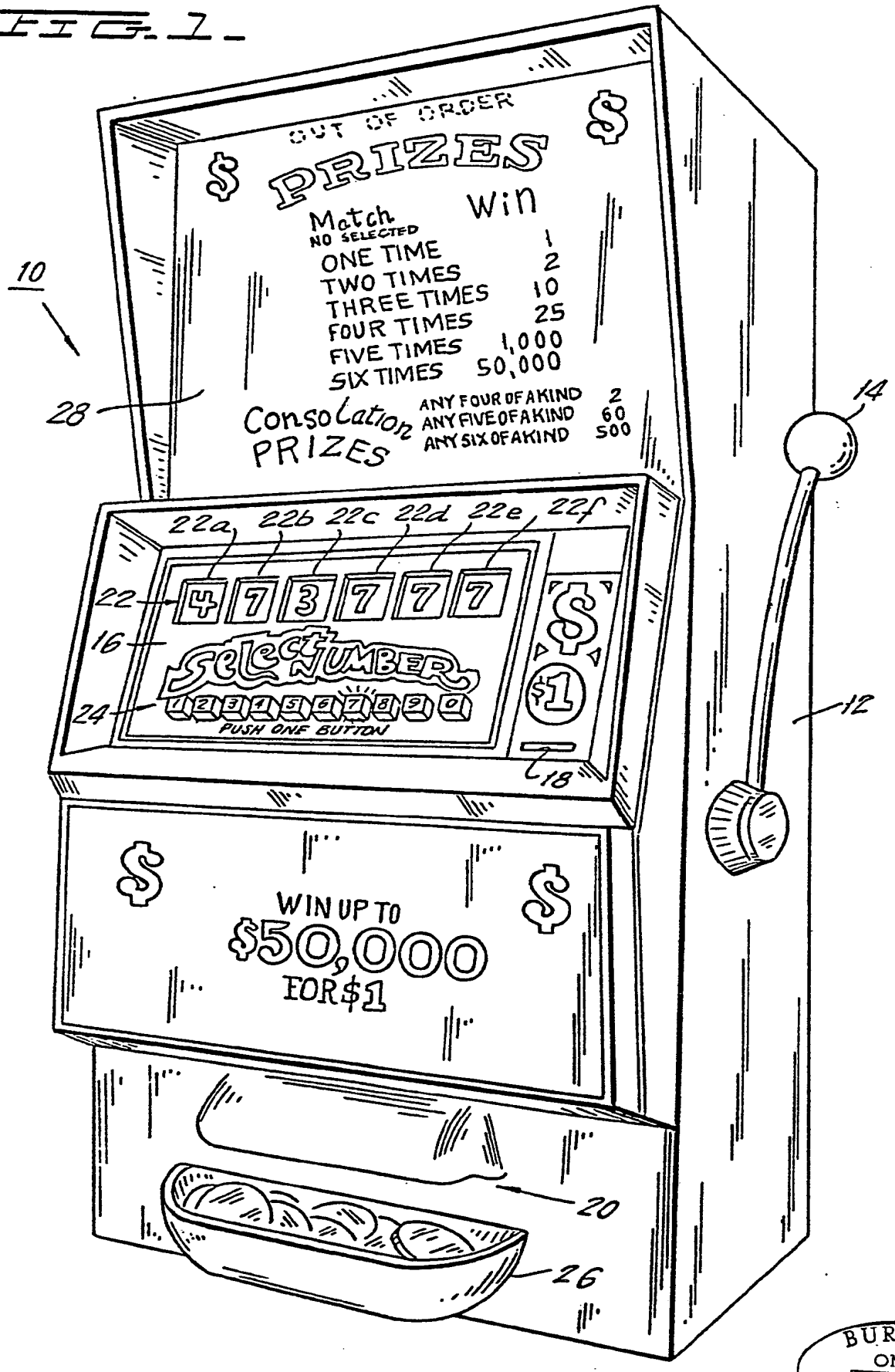
BUREAU OMPI WIPO INTERNATIONAL

26. The method of claim 16, wherein said prize amount is normally determined in accordance with a first predetermined prize structure and is determined in accordance with a second predetermined prize structure during random hours of the day.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO___8002512A1_I_>

FIG. 1



BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

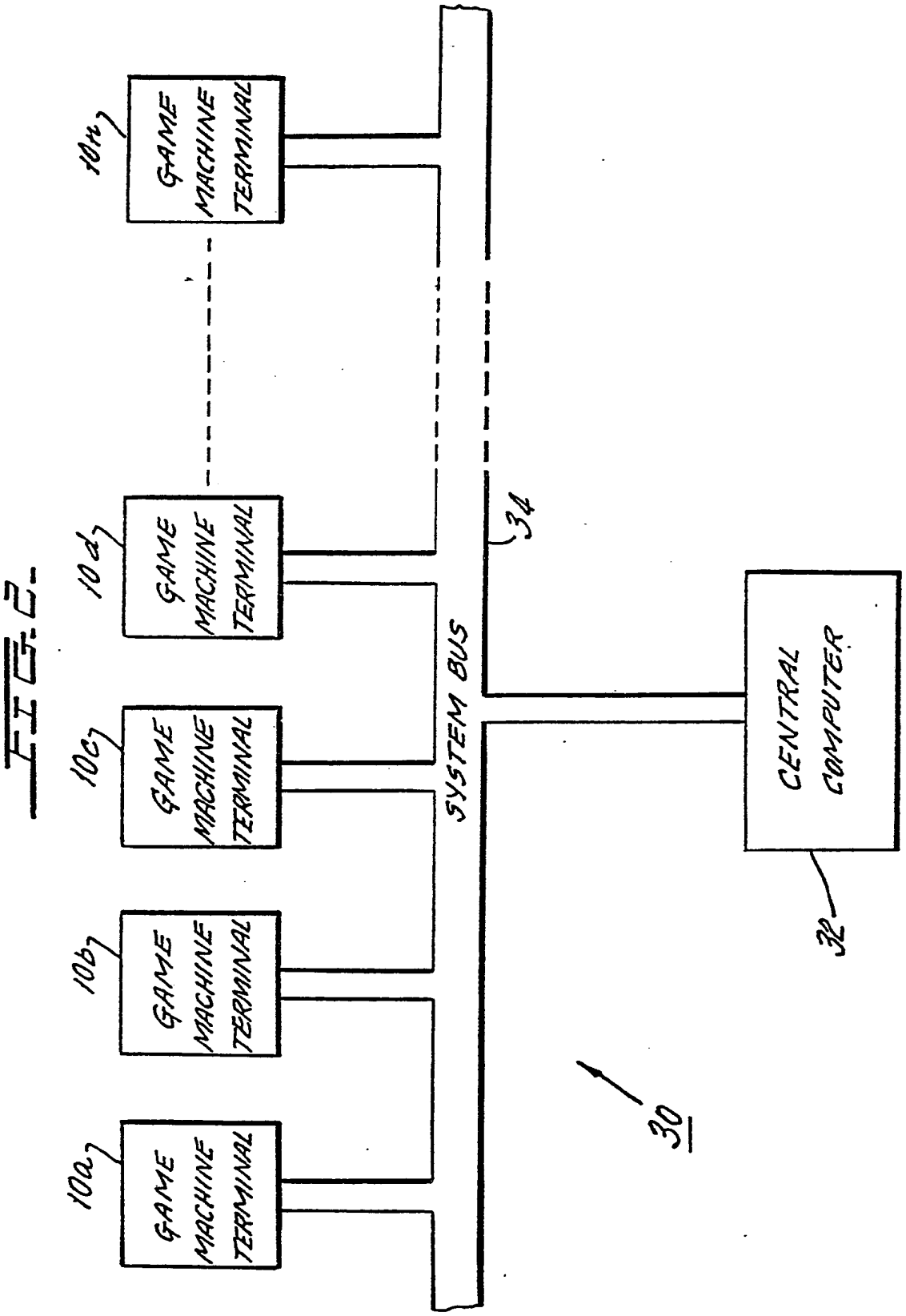


FIG. 2.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

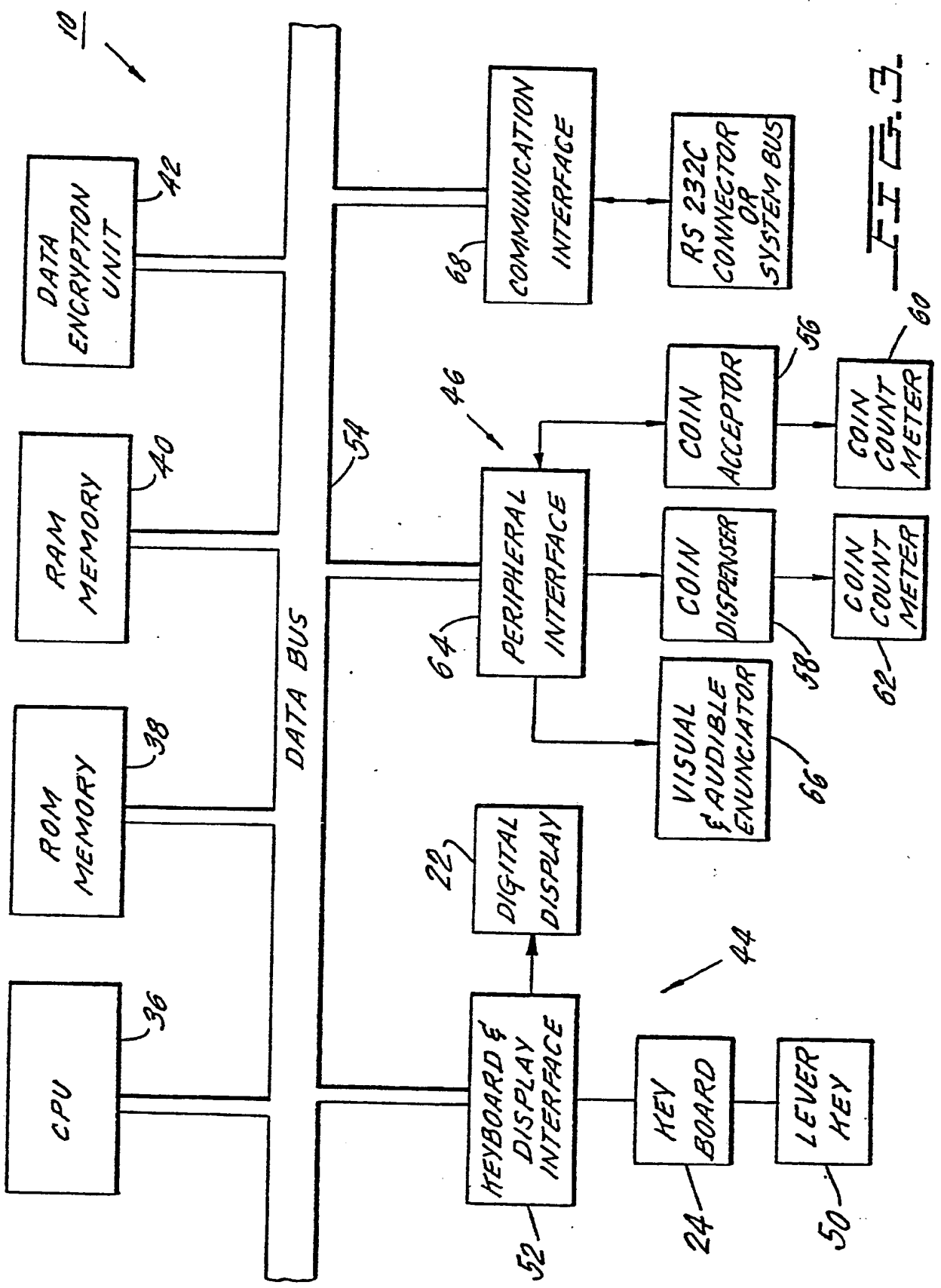
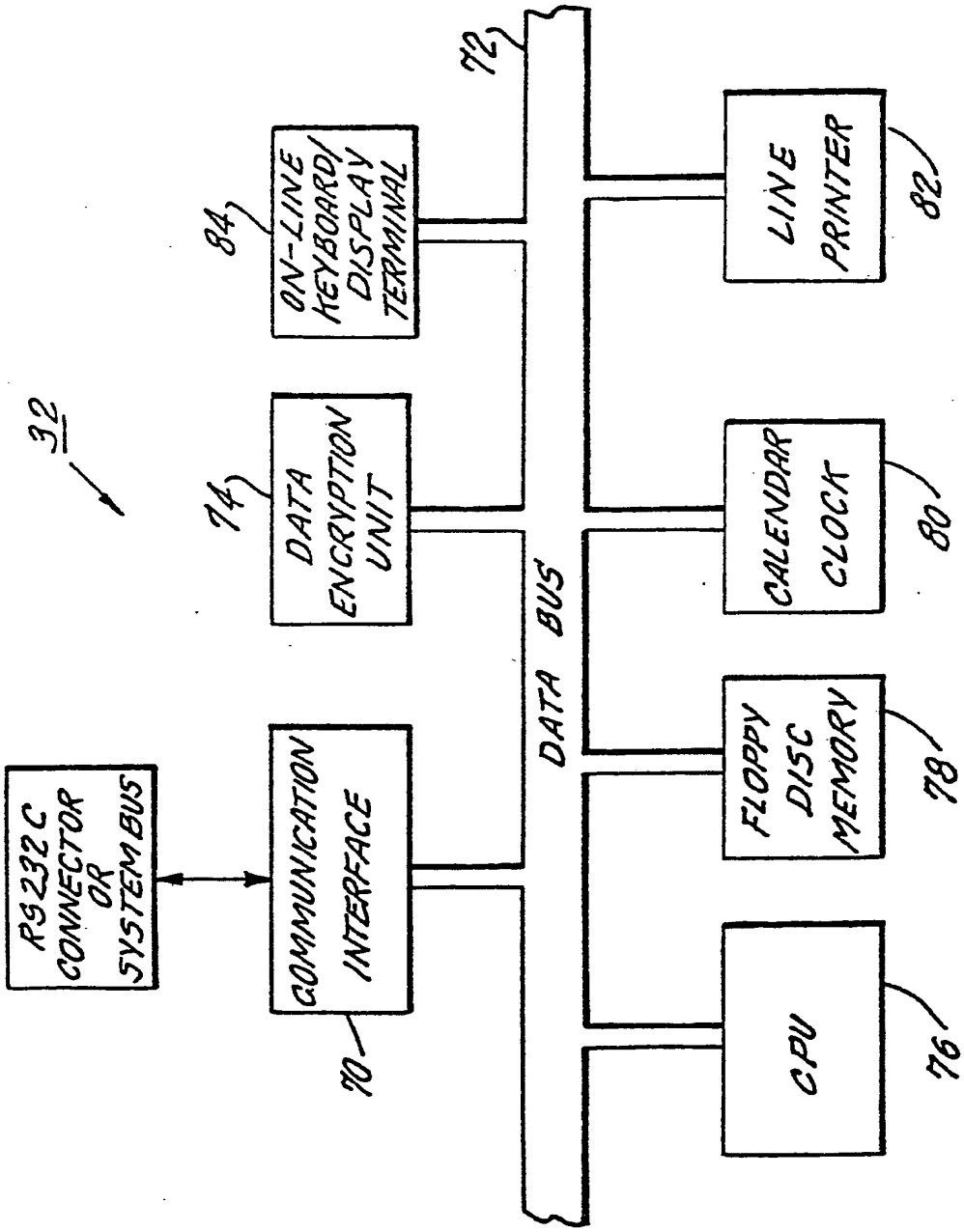


FIG. 3.

BUREAU OMPI WIPO

BNSDOCID: <WO 8002512A1_I_>

FIG. 4.



BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

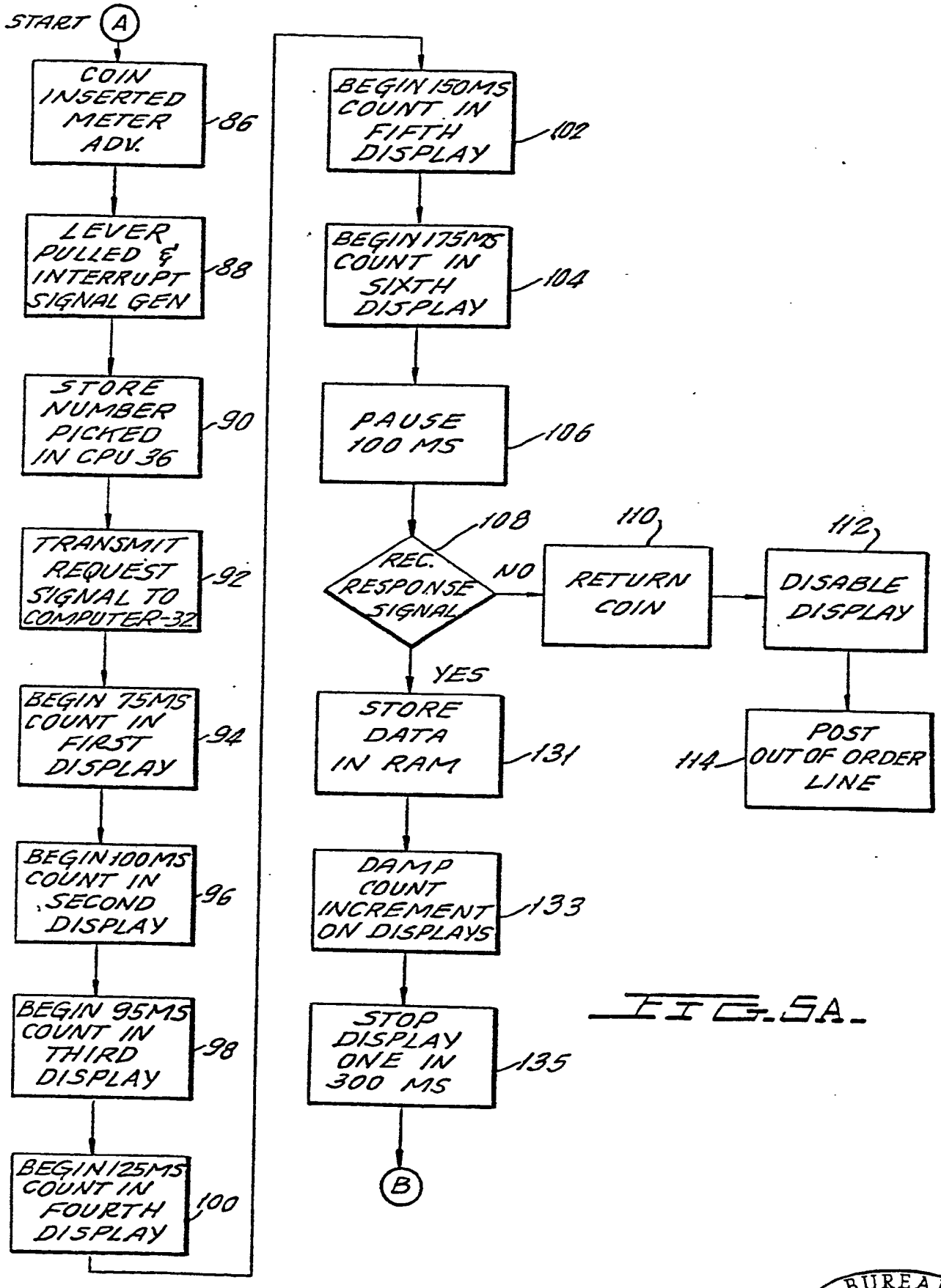


FIG. 5A.

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

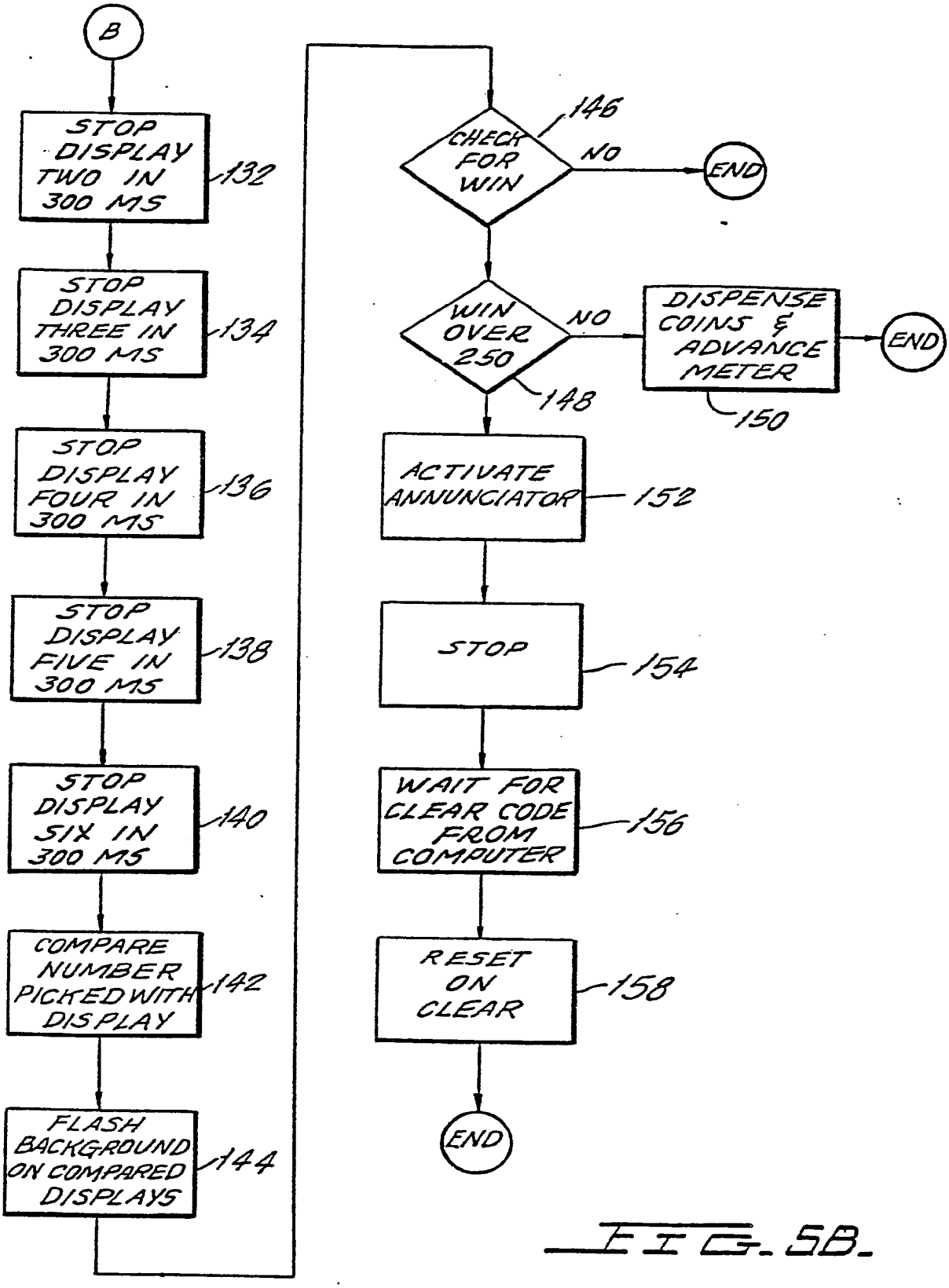


FIG. 5B

BUREAU OMPI WIPO INTERNATIONAL

BNSDOCID: <WO 8002512A1_I_>

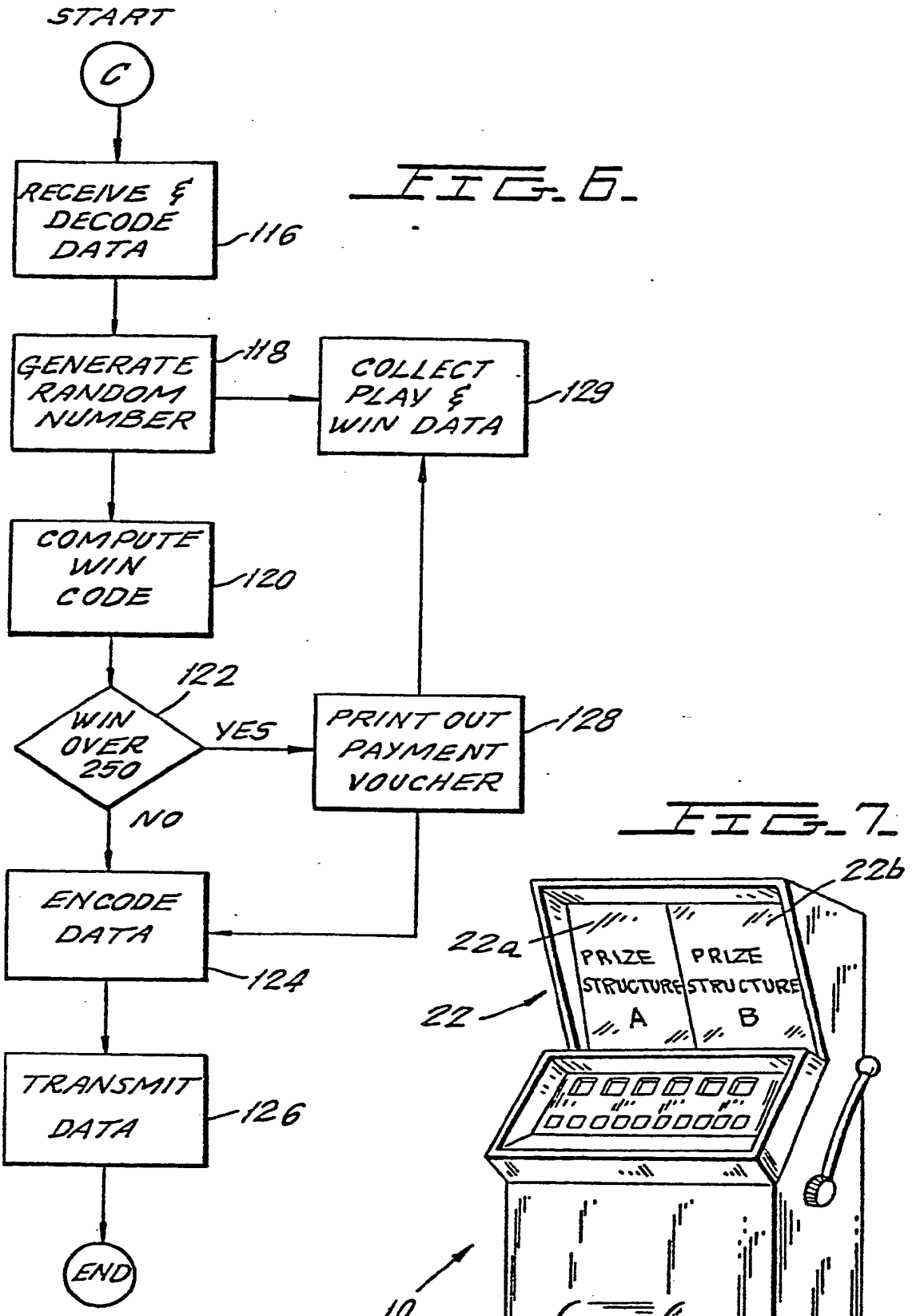
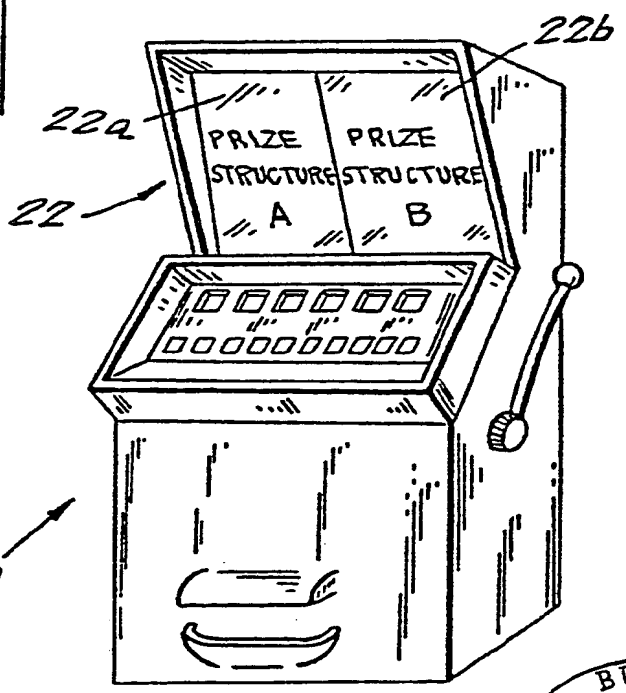


FIG. 6

FIG. 7



BUREAU OMPI WIPO

ENSDOCID: <WO 8002512A1_I_>

INTERNATIONAL SEARCH REPORT

International Application No PCT/US80/00404

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [3]

According to International Patent Classification (IPC) or to both National Classification and IPC

INT. CL.[3] A63F 5/04
U.S. CL. 273/138A

II. FIELDS SEARCHED

Minimum Documentation Searched [4]

Classification System	Classification Symbols
U.S.	194/97R 273/1E, 138A, 143R, 143C 340/323R 364/412

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [5]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [14]

Category *	Citation of Document, [16] with indication, where appropriate, of the relevant passages [17]	Relevant to Claim No. [18]
X	US, A, 3,786,234, Published 15 January 1974, Trent.	1-26
X	US, A, 3,770,269, Published 06 November 1973, Elder.	1-26
X	US, A, 3,796,433, Published 12 March 1974, Fraley.	8
X	US, A, 4,072,930, Published 07 February 1978, Lucero.	9,15,20
A	US, A, 4,095,795, Published 20 June 1978, Saxton.	1-26
A	US, A, 4,099,722, Published 11 July 1978, Rodesch.	1-26
A, P	US, A, 4,157,829, Published 12 June 1979, Goldman.	1-26

* Special categories of cited documents: [15]

"A" document defining the general state of the art

"E" earlier document but published on or after the international filing date

"L" document cited for special reason other than those referred to in the other categories

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but on or after the priority date claimed

"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention

"X" document of particular relevance

IV. CERTIFICATION

Date of the Actual Completion of the International Search [2]	Date of Mailing of this International Search Report [2]
16 September 1980	29 SEP 1980
International Searching Authority [1]	**Signature of Authorized Officer [20]**
ISA/US	V.Y. Hum

~~BNSDOCID: <WO 8002512A1_I_>

This Page Blank (uspto)